

Monitoring Air Quality in Korea's Metropolises on Ultra-High Resolution Wall-Sized Displays

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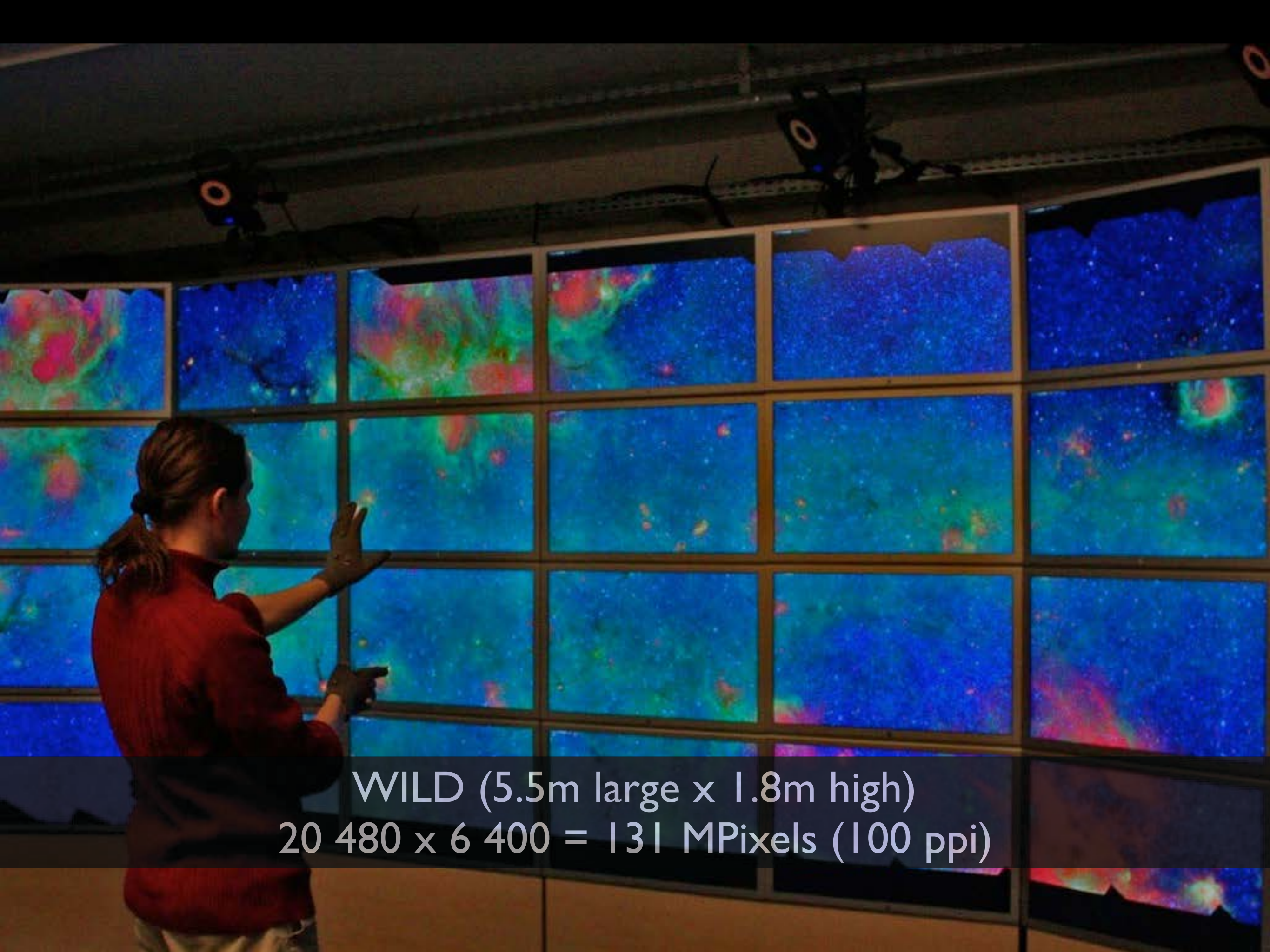
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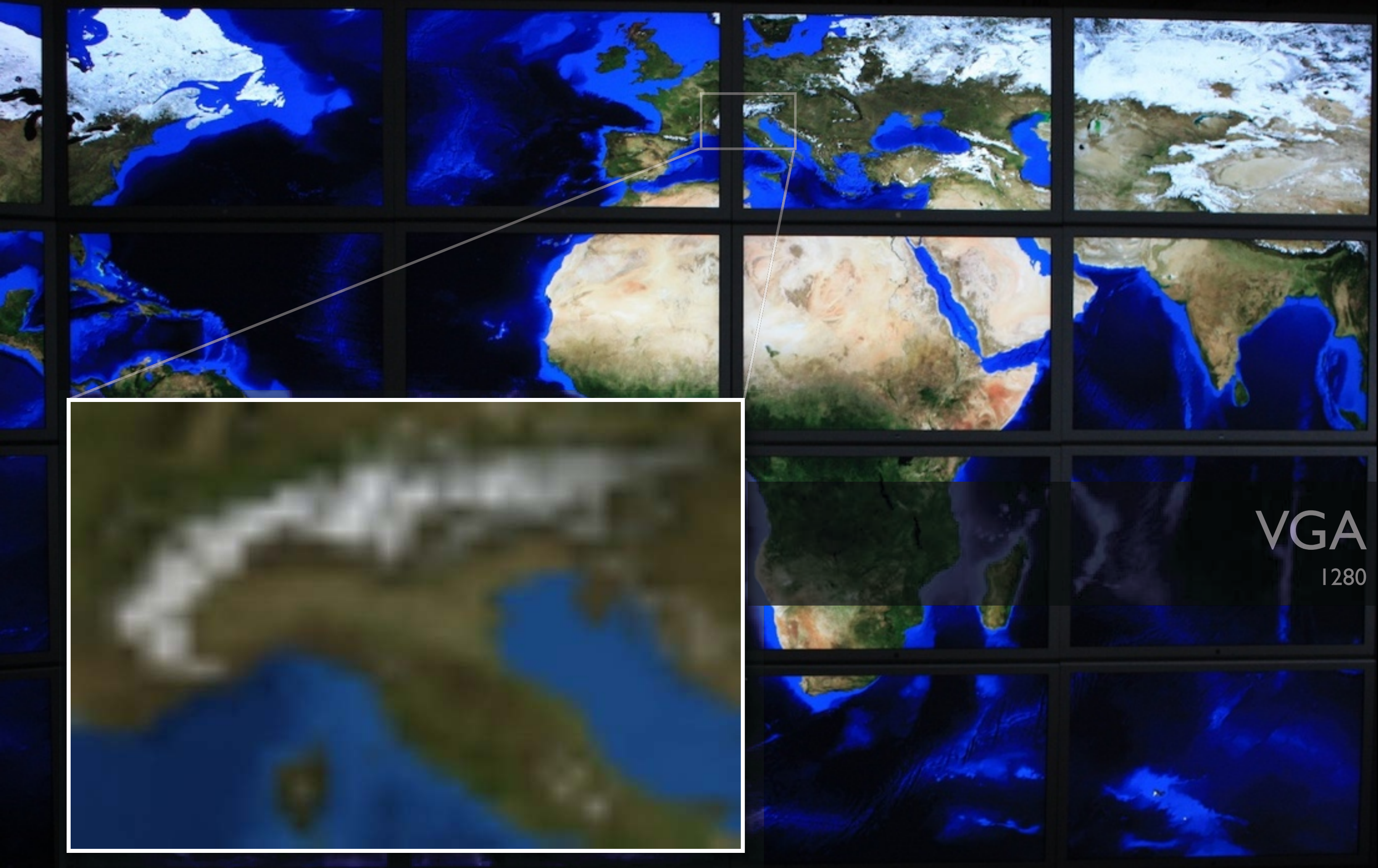
Monitoring Air Quality in Korea's Metropolises on Ultra-High Resolution Wall-Sized Displays

International Workshop on Urban Data Science and Technology
@ADW 2017

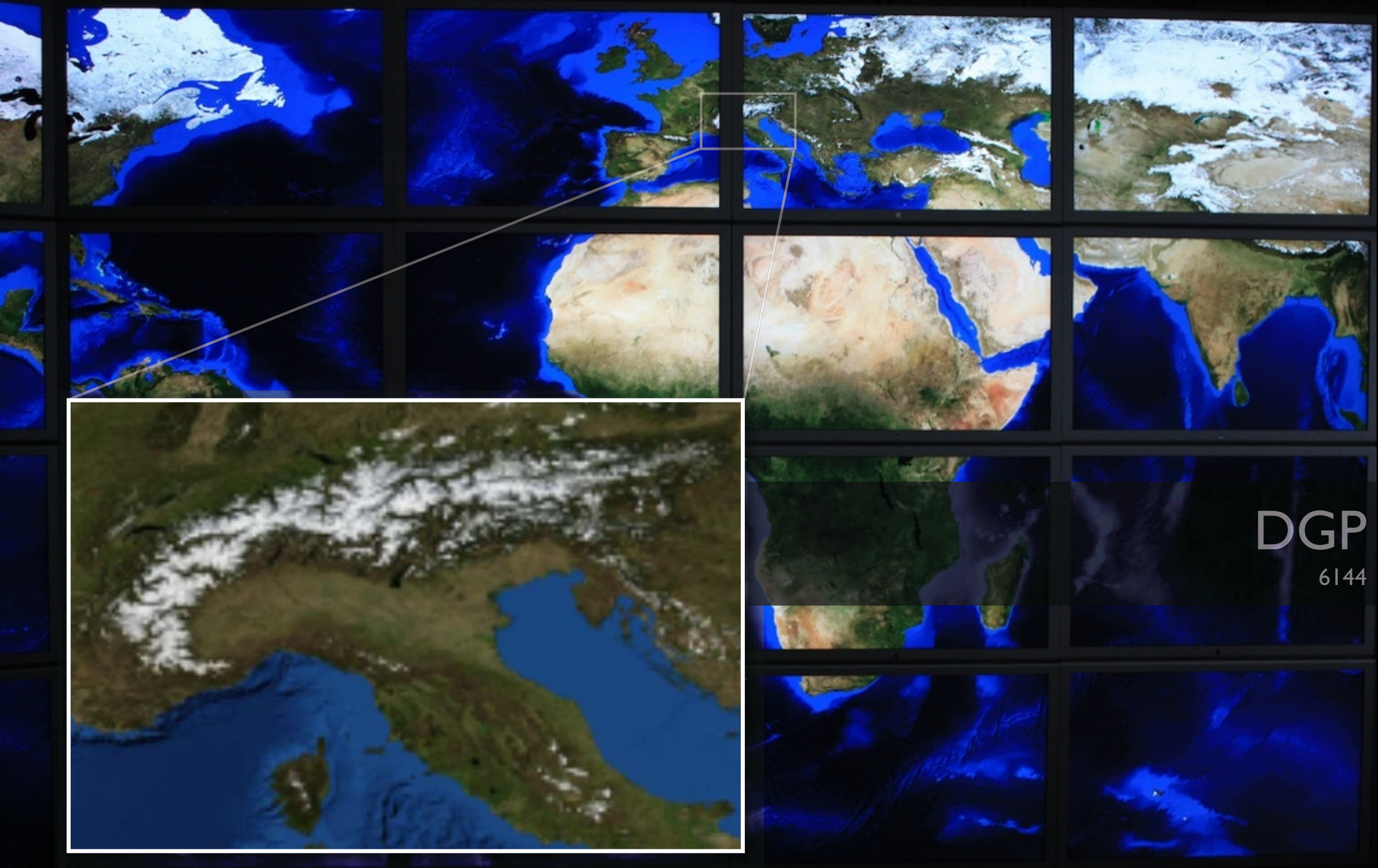




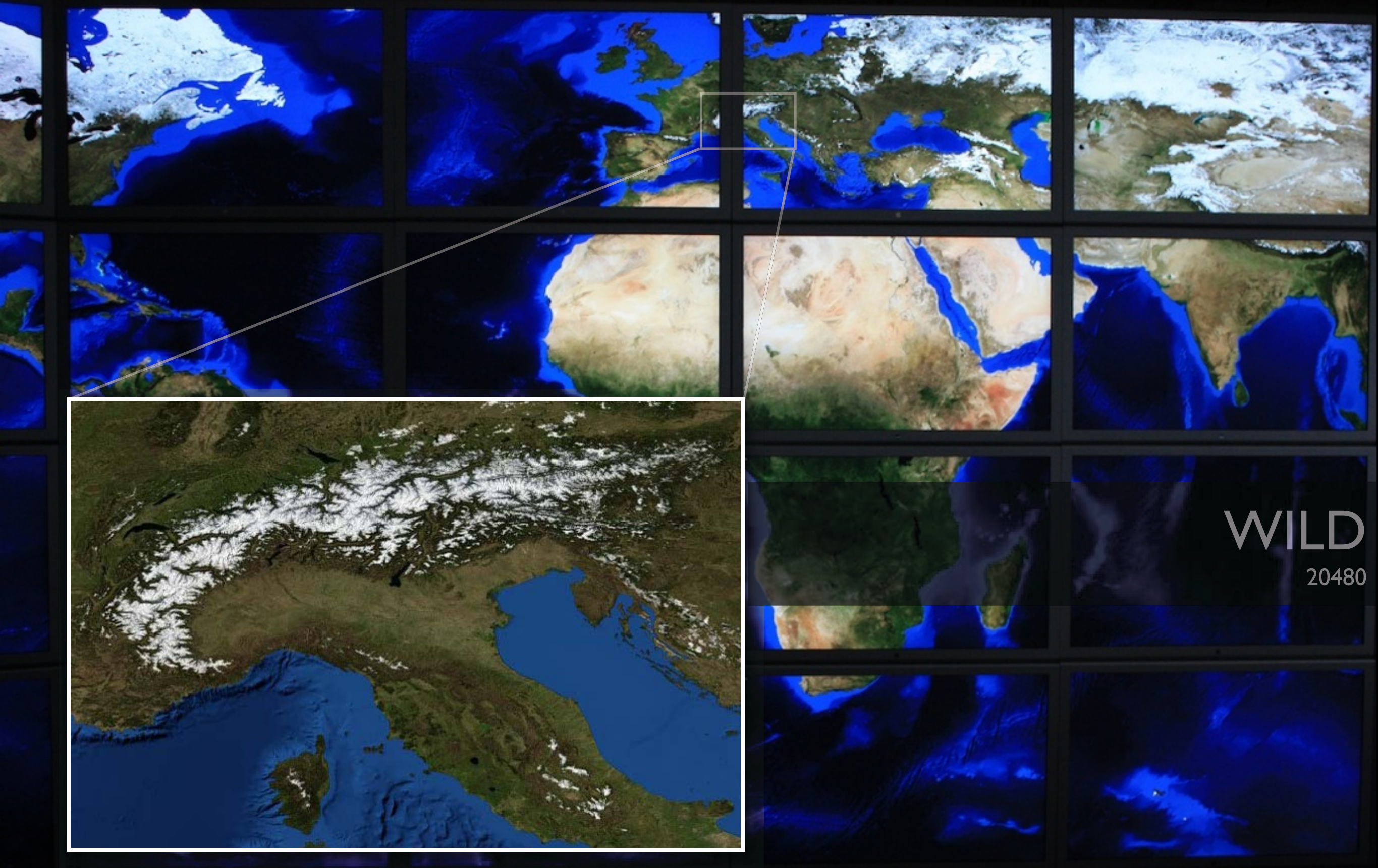
WILD (5.5m large x 1.8m high)
 $20\,480 \times 6\,400 = 131 \text{ MPixels (100 ppi)}$



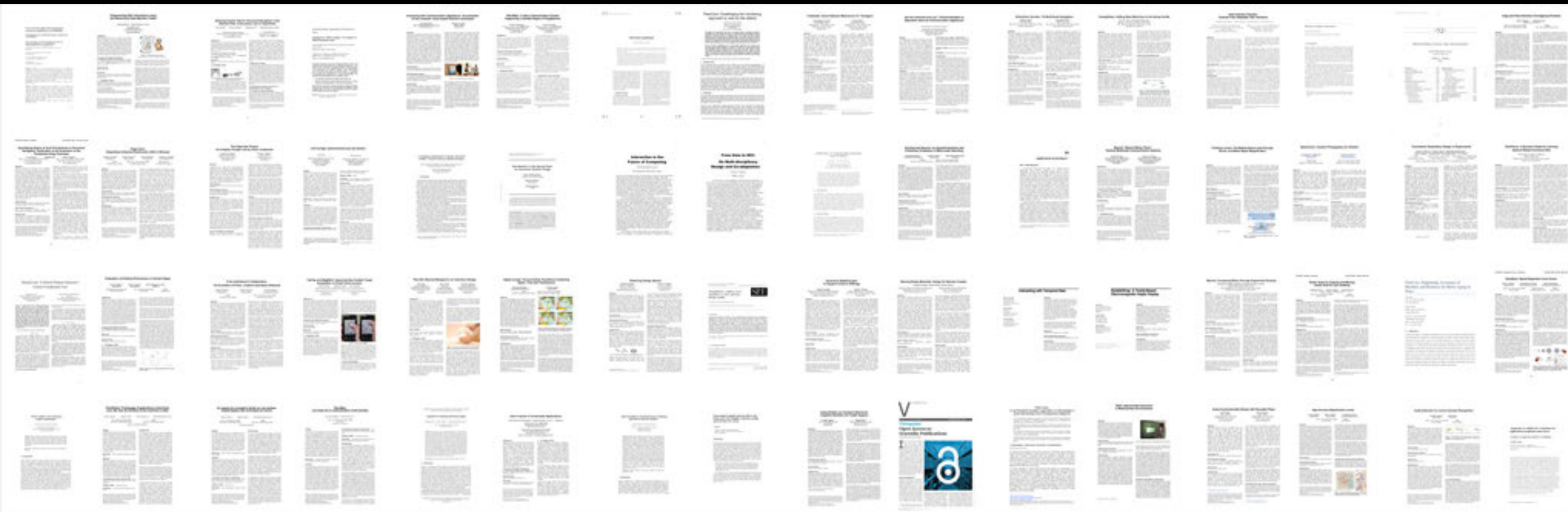
VGA
1280



DGP
6144

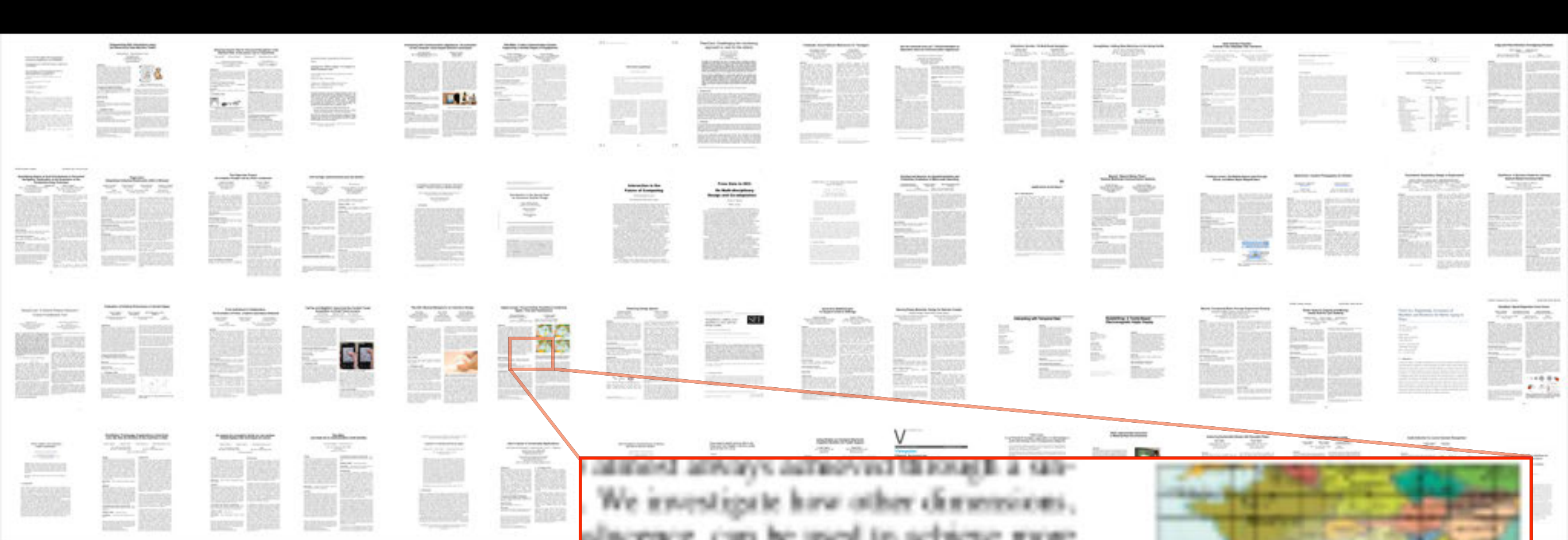


WILD
20480



64 PDF pages

on a 5.5m x 1.8m surface



...always achieved through a ...
 We investigate how other dimensions, ...
 We present an extension to Carpen- ...
 analyzing presentation space accommo- ...
 We define new lenses in that ...
 lenses, and compare them to existing ...
 lenses based on a generic task: focus ...
 We show that one new lens, the Serran-C ...
 can outperform all others.



(c)

Figure 8. Various transitions between ...
 then causing occlusion, (b) distortin ...
 ing transformer, (d) using a combi

region of the context. While ...
 are generally favored and have ...
 in some situations [16, 22, 2] ...
 show their limits: for instance ...
 densely populated regions, and

DGP

6144

Focus + Context, Fisheye lenses, ...
 Mapping, Controlled experiment

Keywords

Human-Computer Interaction, H5 Information Interfaces and Pre-
 Interfaces (H.1.2, I.3.6)



almost always achieved through a single lens. We investigate how other dimensions, such as transparency, can be used to achieve more complex transitions. We present an extension to Carpen's work, unifying presentation space accommodations with other dimensions. We define new lenses in that space, and compare them to existing lenses. We evaluate experiments based on a generic task: focus on a specific region of the context. We show that one new lens, the SPEED-COUPLED lens, significantly outperforms all others.



(c)

Figure 1. Various transitions between regions of the context causing occlusion, (b) distorting the context, (c) using transparency, (d) using a combination of transparency and distortion.

region of the context. While these lenses are generally favored and have been used in some situations [16, 22, 24], they show their limits: for instance, they are not well suited for densely populated regions such as the

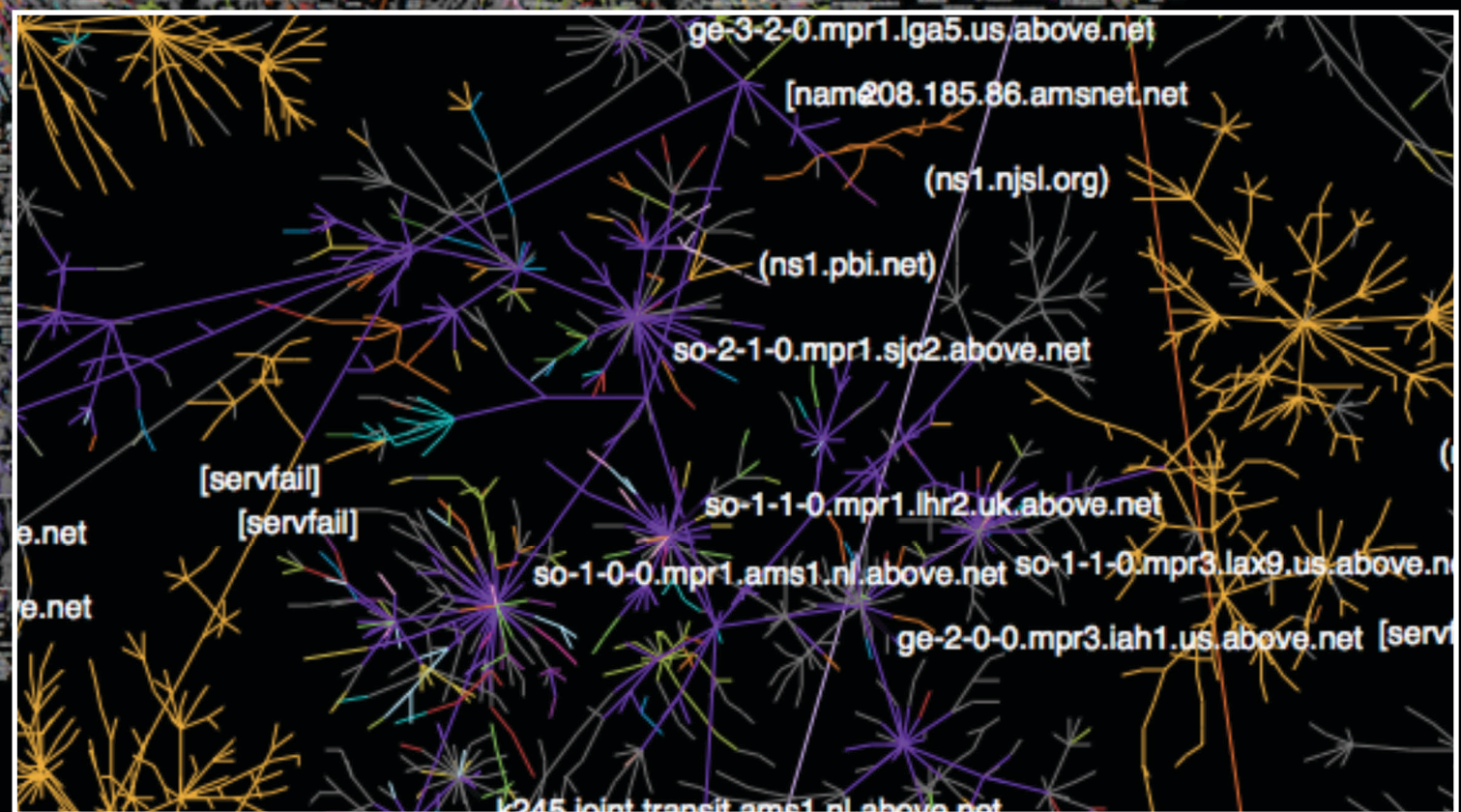
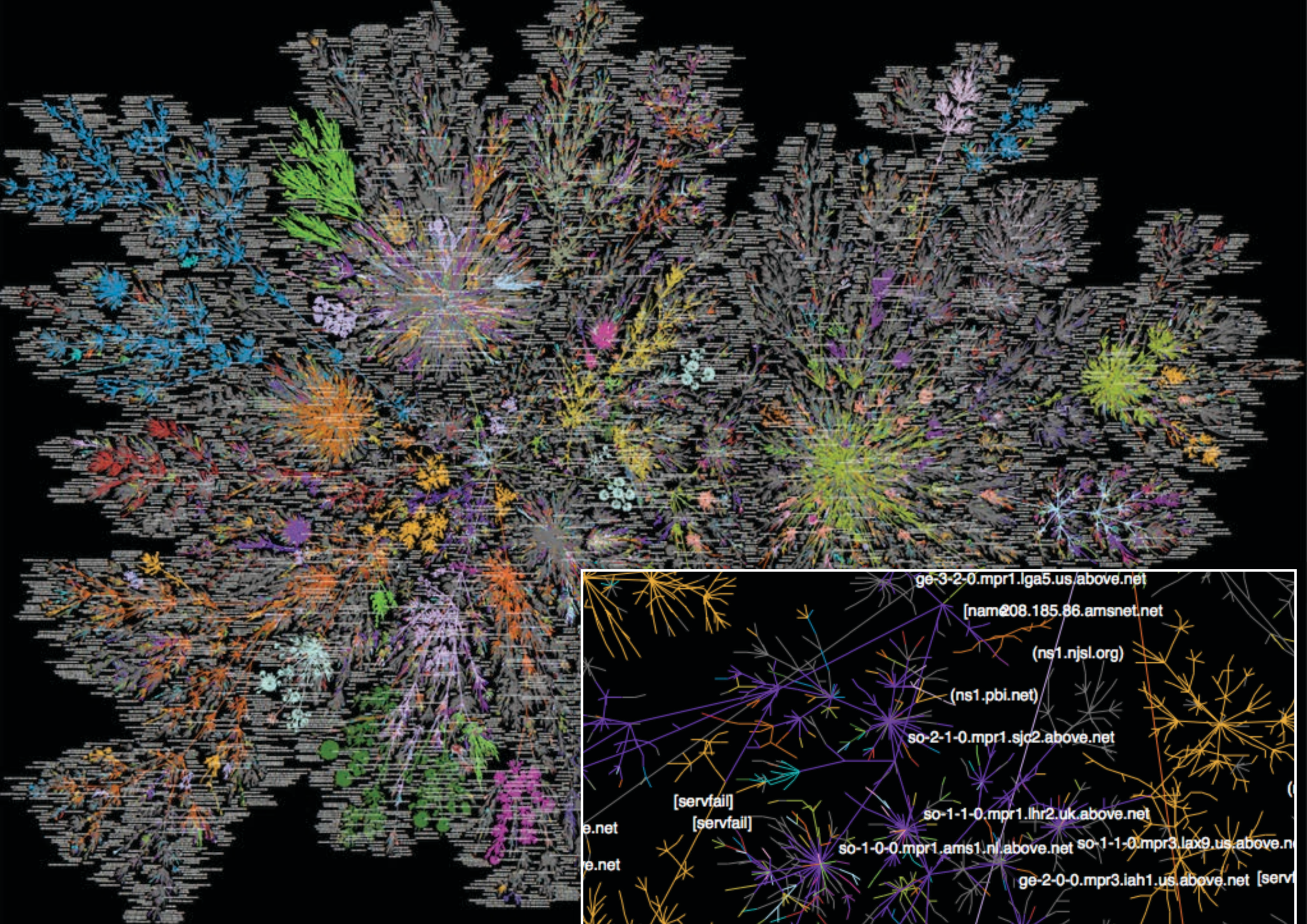
WILD

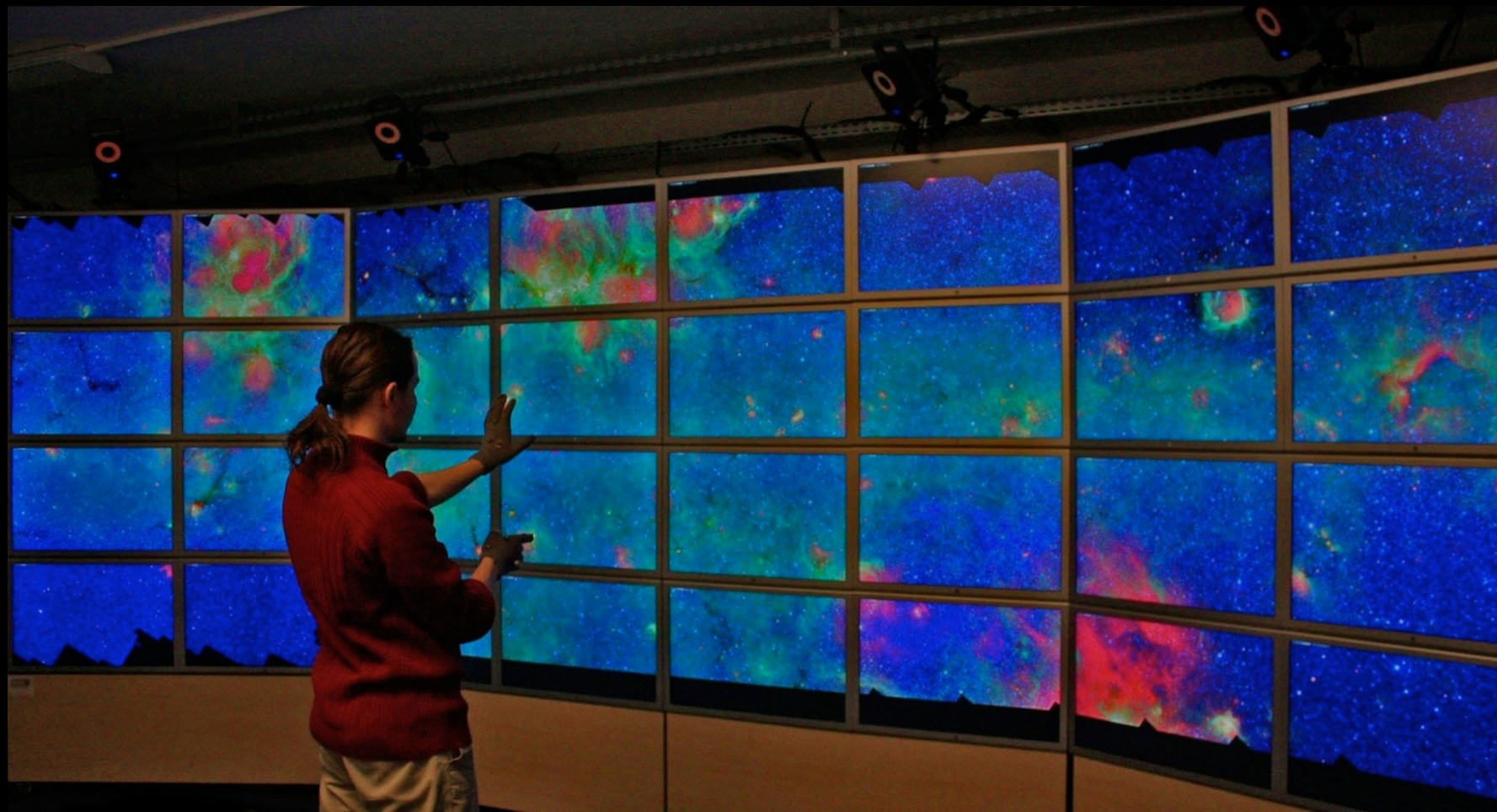
20480

s, Focus + Context, Fisheye lenses, targeting, Controlled experiment

Keywords

Information Interfaces and Pre-Interfaces (H.1.2, I.3.6)



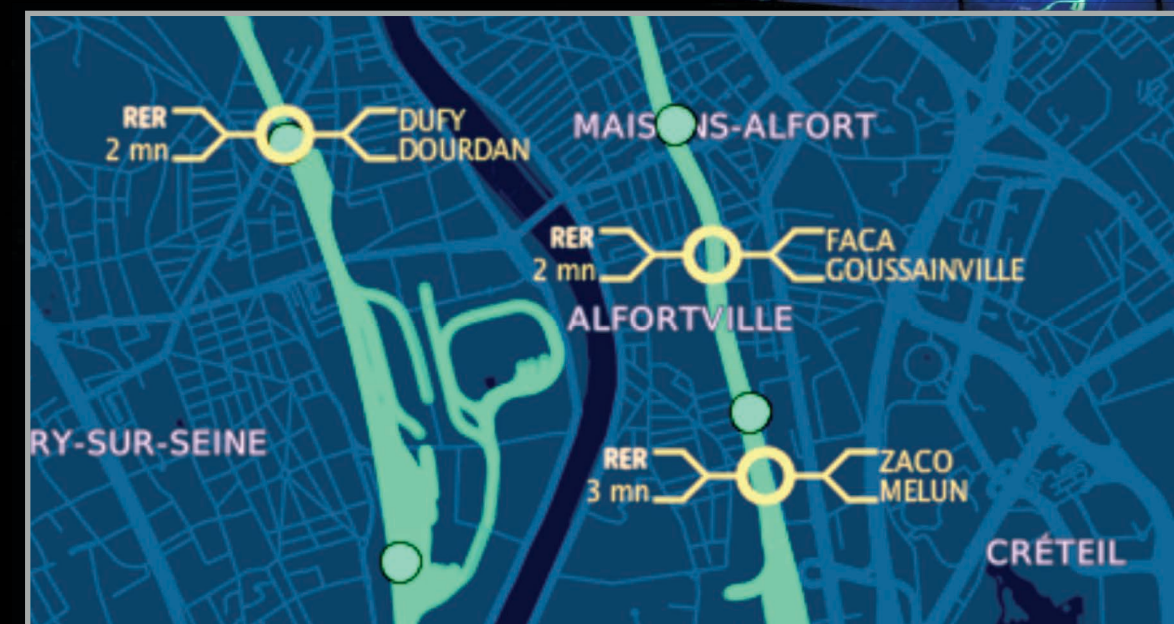
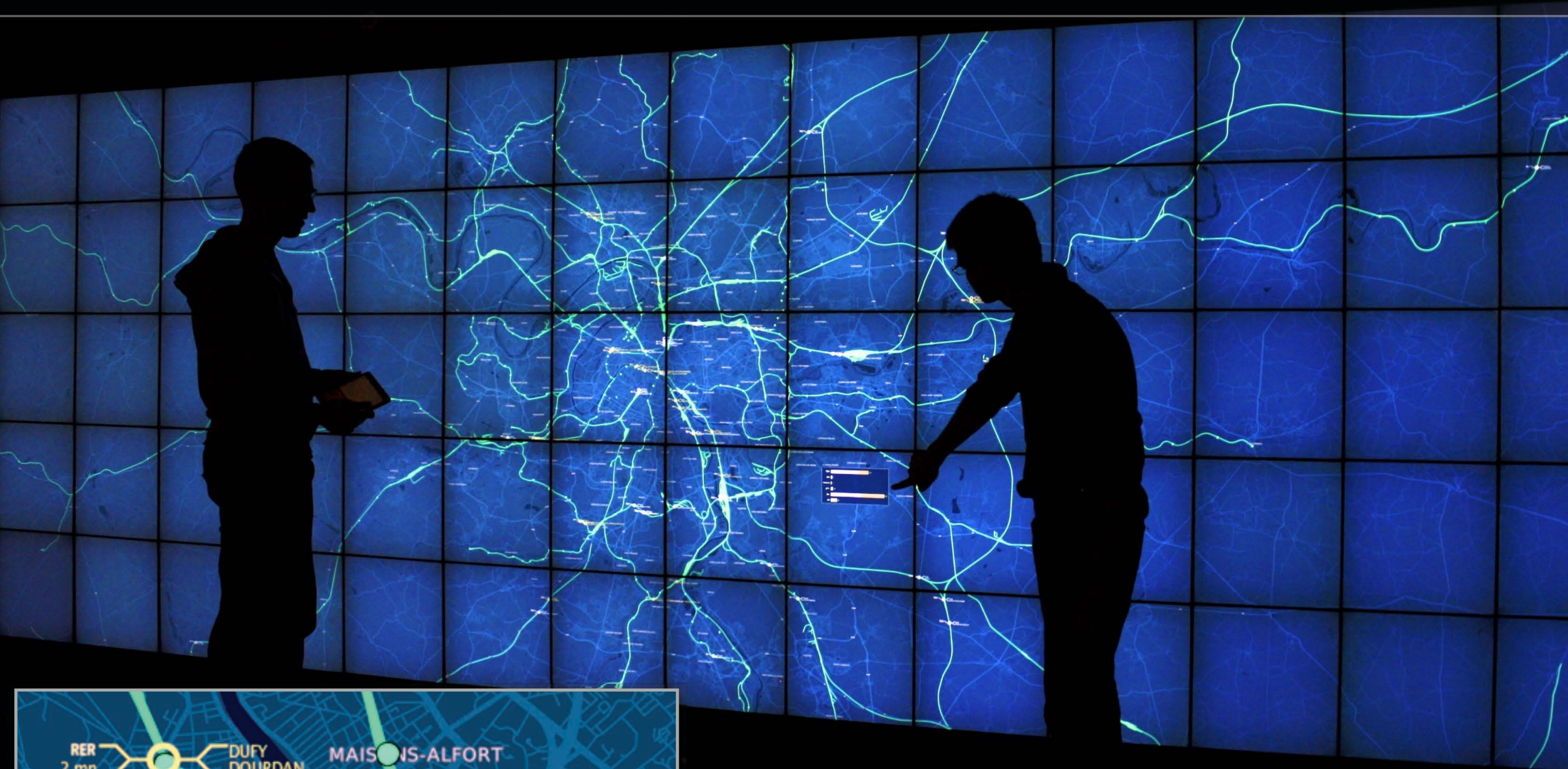


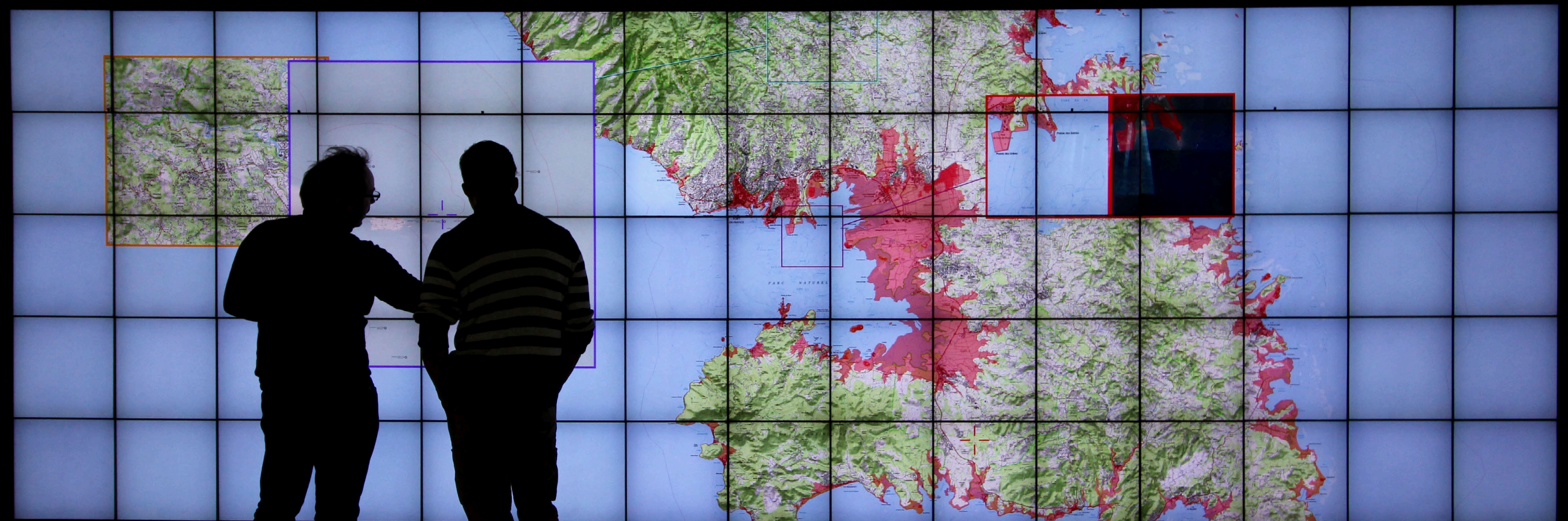
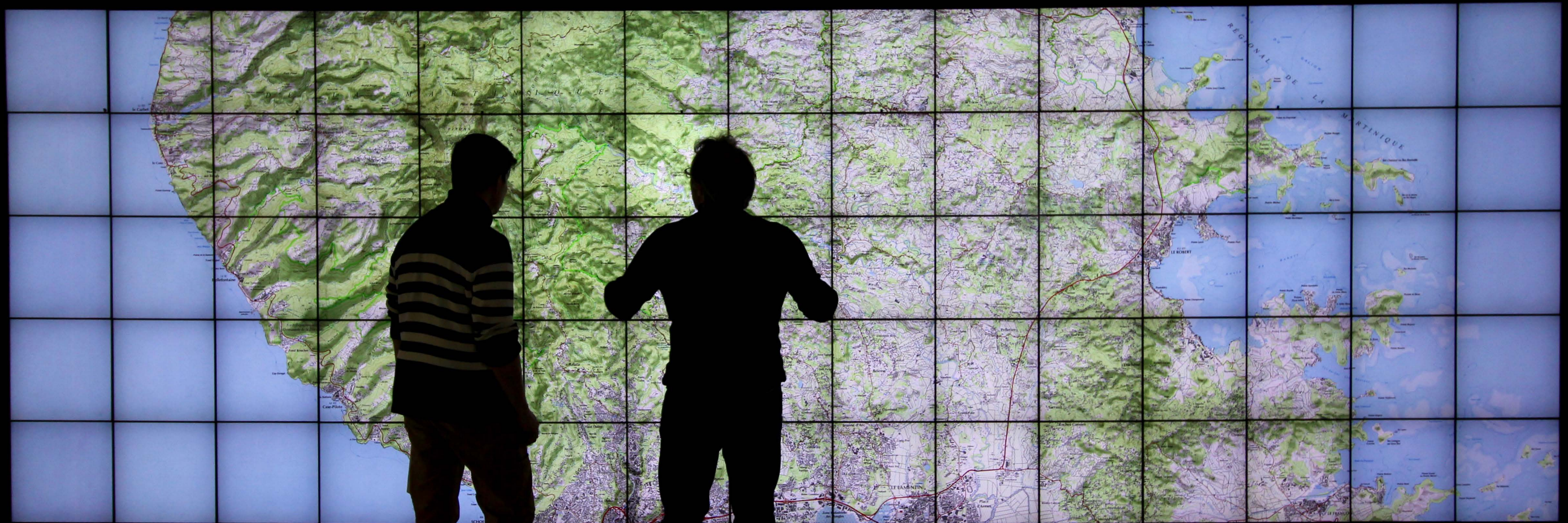
- Interactive visualization of large quantities of data
- Promote physical navigation

Collaborative Work



Real-time monitoring of geolocated data



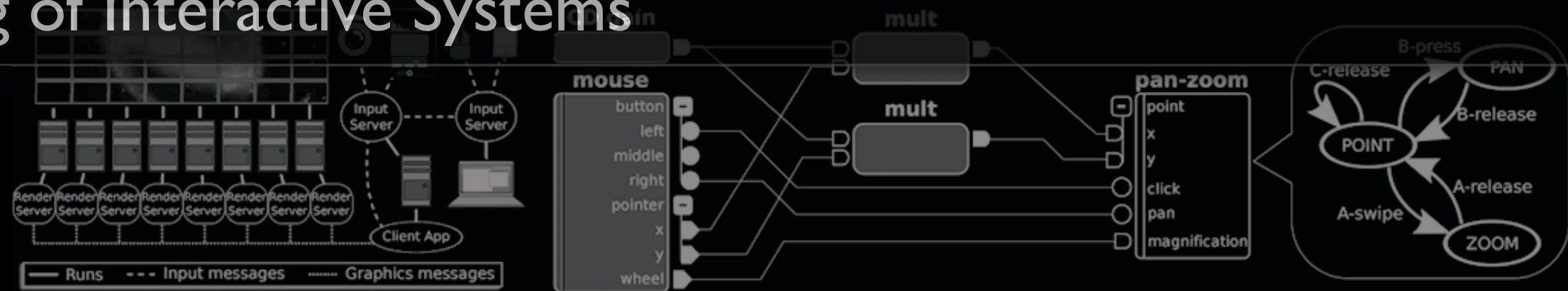


Exploratory Visualization of Astronomical Data on Ultra-high-resolution Wall Displays

E. Pietriga, F. del Campo, A. Ibsen, R. Primet, C. Appert, O. Chapuis, M. Hempel, R. Muñoz, S. Eyheramendy Duerr, A. Jordan, H. Dole, *Astronomical Telescopes and Instrumentation*, SPIE, 2016 (invited paper)



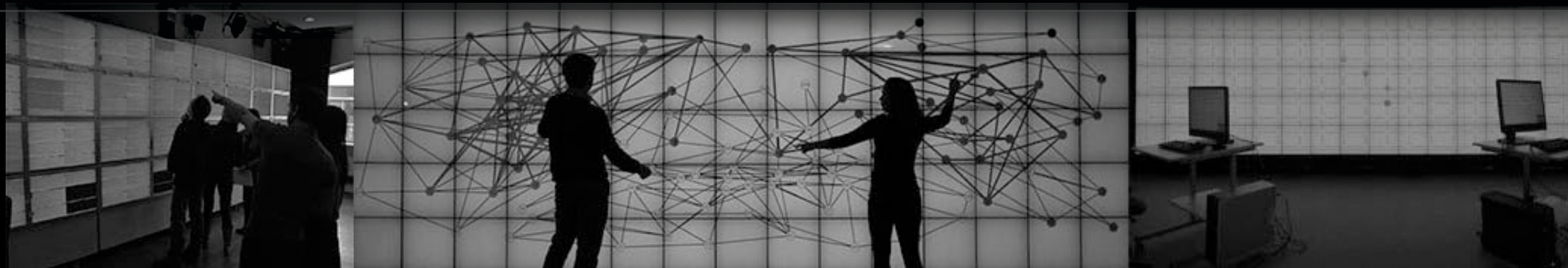
Engineering of Interactive Systems

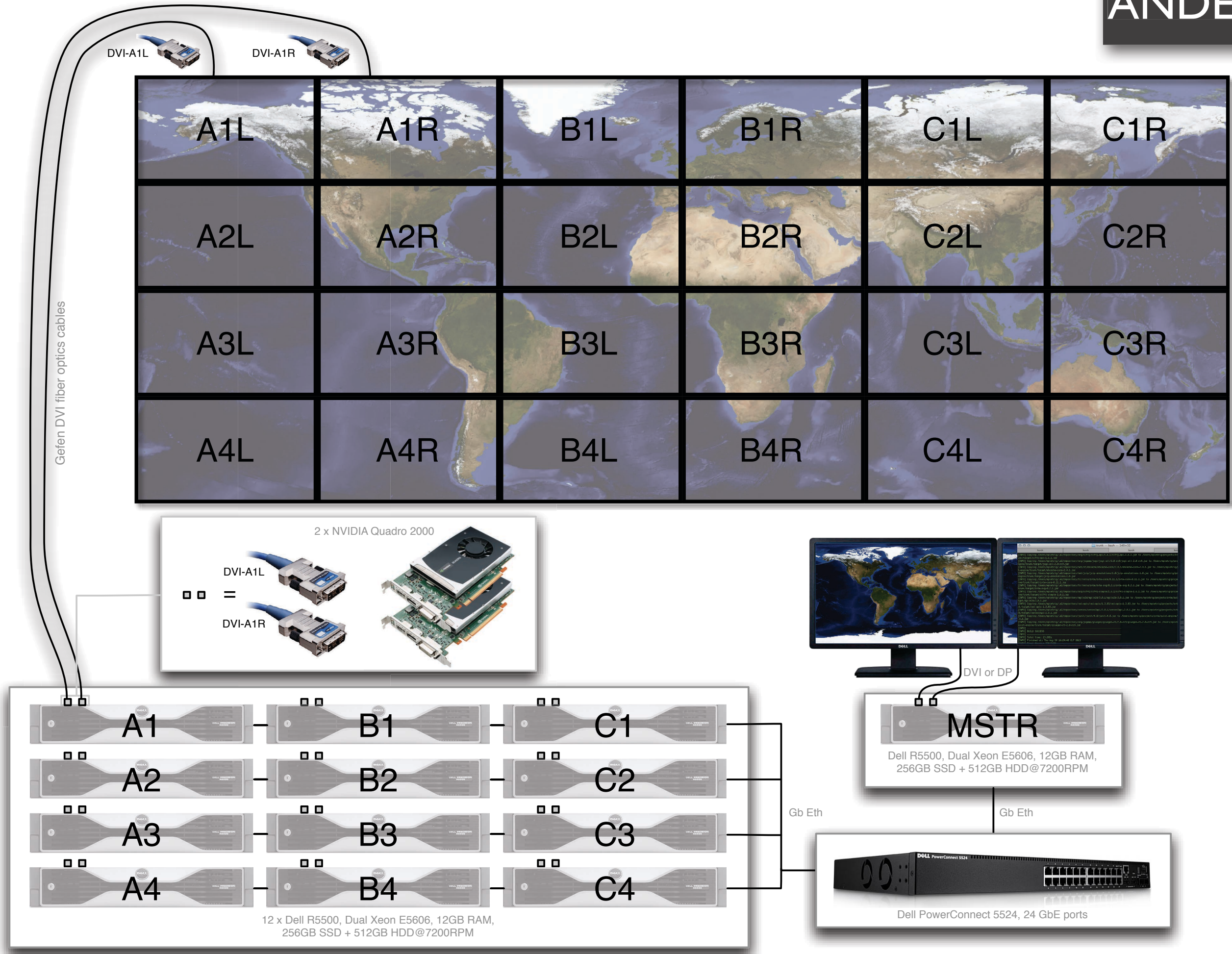


Interaction and Visualization Techniques



Computer-Supported Cooperative Work







WILD (Paris, France)

16 nodes + 2 masters

- 8x4 tiles (2560x1600)
- 36 NVidia GeForce GT8800
- Mac OS X & Linux Ubuntu
- 144 Intel Xeon cores
- 192 GB RAM
- HDD storage (10TB)

1 Gb eth network

Vicon motion tracker (10 cameras)

Fat bezels



ANDES (Santiago de Chile)

12 nodes + 1 master

- 6x4 tiles (1920x1080)
- 24 NVidia Quadro 2000
- Linux Fedora 19
- 144 Intel Xeon cores
- 156 GB RAM
- SSD+HDD storage (10TB)

1 Gb eth network

No motion tracking

Narrower bezels

ZaagTech multi-touch frame



WILDER (Paris, France)

10 nodes + 2 masters

- 15x5 tiles (960x960)
- 10 NVidia K5000
- Linux Ubuntu 2014
- 40 Intel Xeon cores
- ??? GB RAM
- SSD+HDD storage

1 Gb eth network

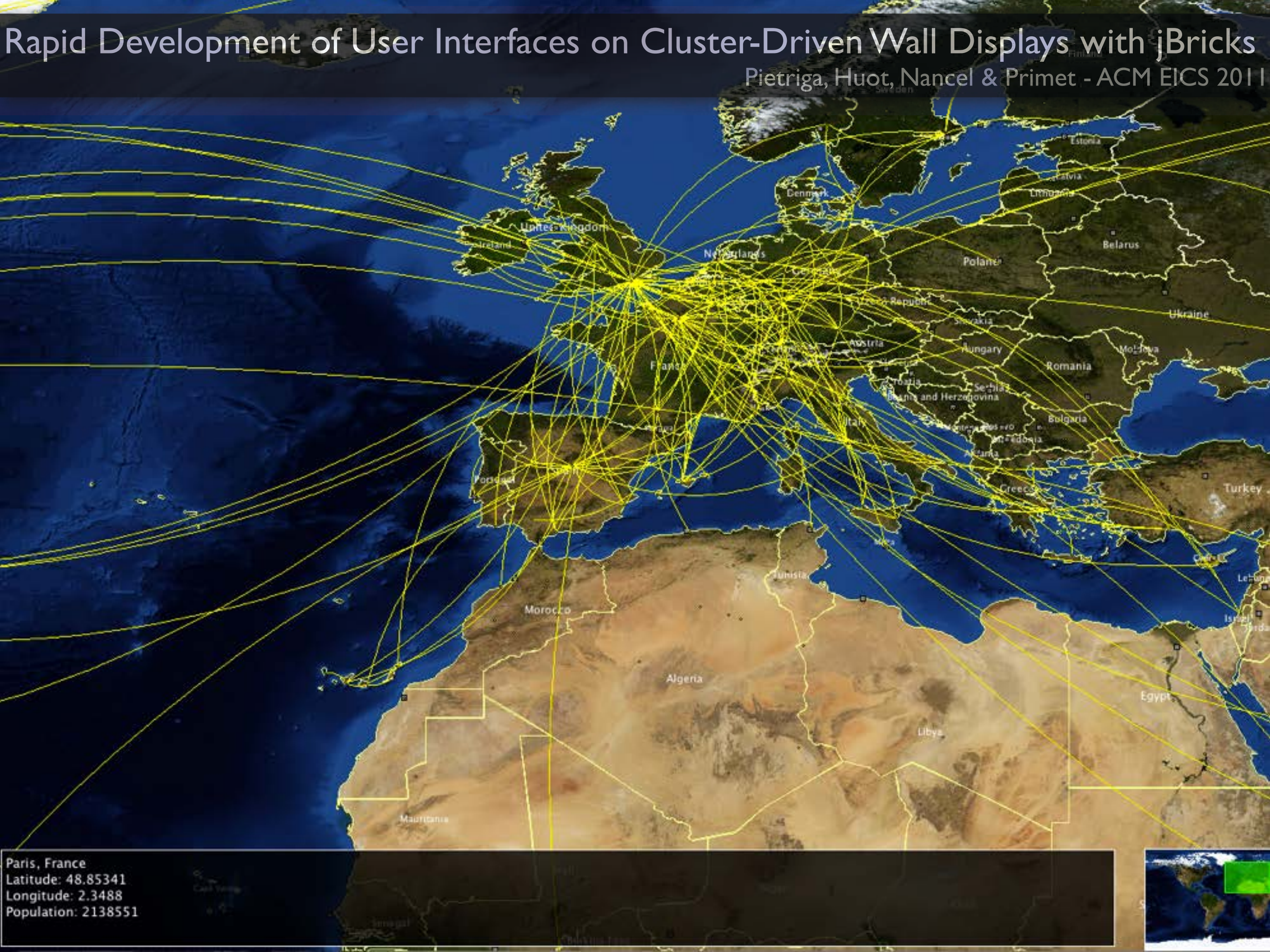
Vicon motion tracker (6 cameras)

Very narrow bezels

PQLabs multi-touch frame

Rapid Development of User Interfaces on Cluster-Driven Wall Displays with jBricks

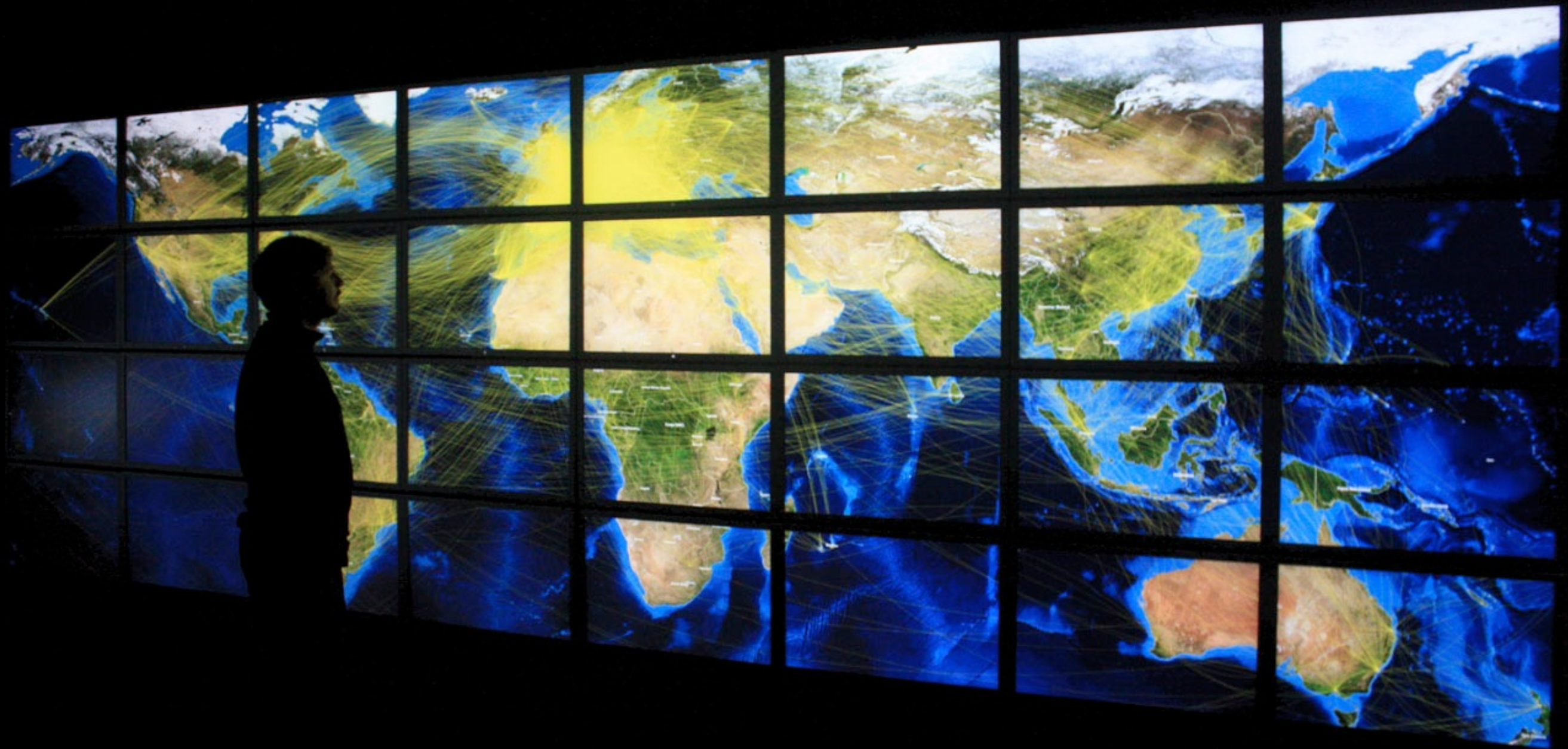
Pietriga, Huot, Nancel & Primet - ACM EICS 2011



Paris, France
Latitude: 48.85341
Longitude: 2.3488
Population: 2138551

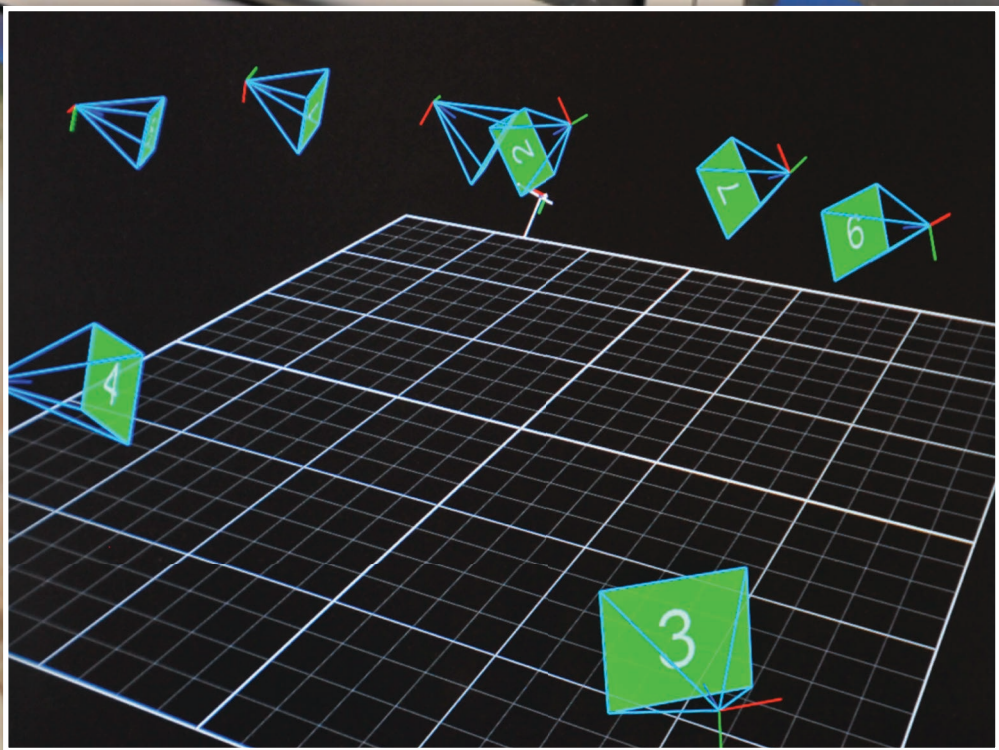
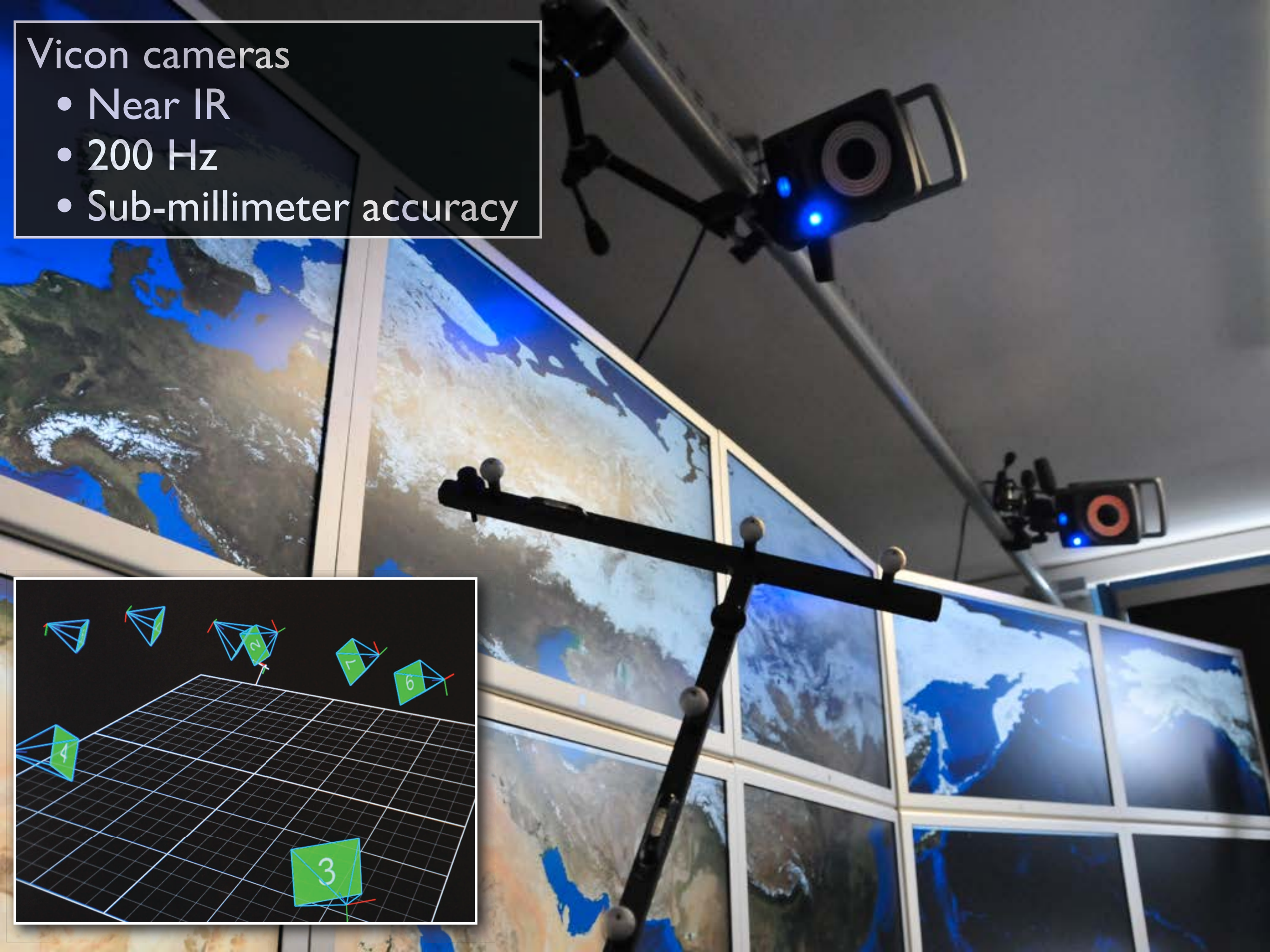
Rapid Development of User Interfaces on Cluster-Driven Wall Displays with jBricks

Pietriga, Huot, Nancel & Primet - ACM EICS 2011







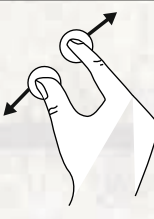
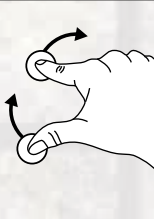




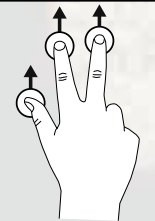


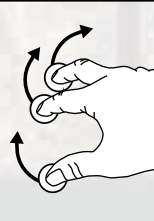
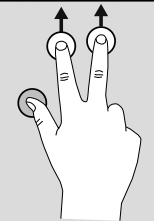



Vicon cameras

- Near IR
- 200 Hz
- Sub-millimeter accuracy



Multi-touch gestures for discrete and continuous control

Olafsdottir and Appert - ACM AVI 2014

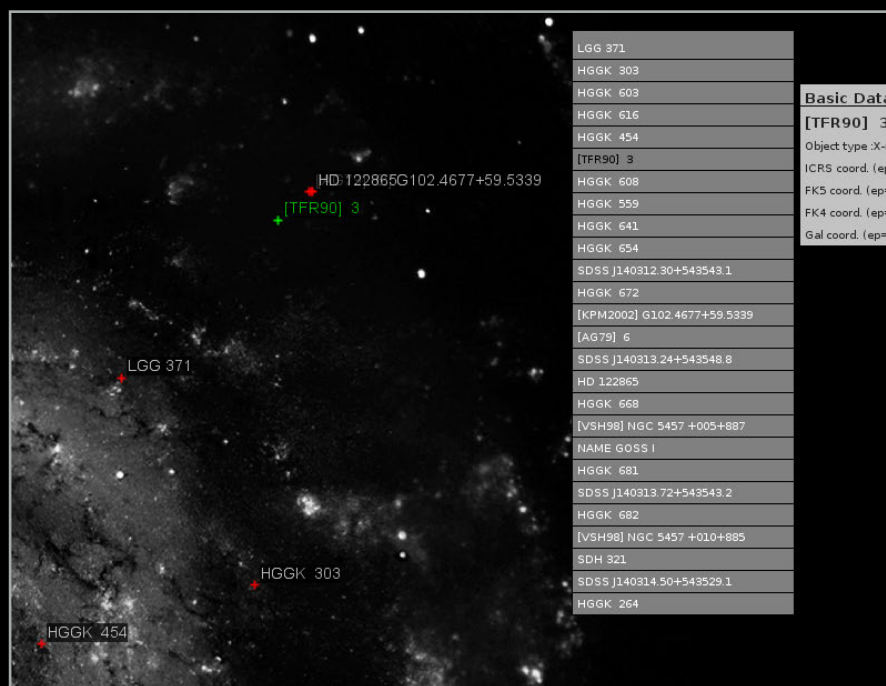
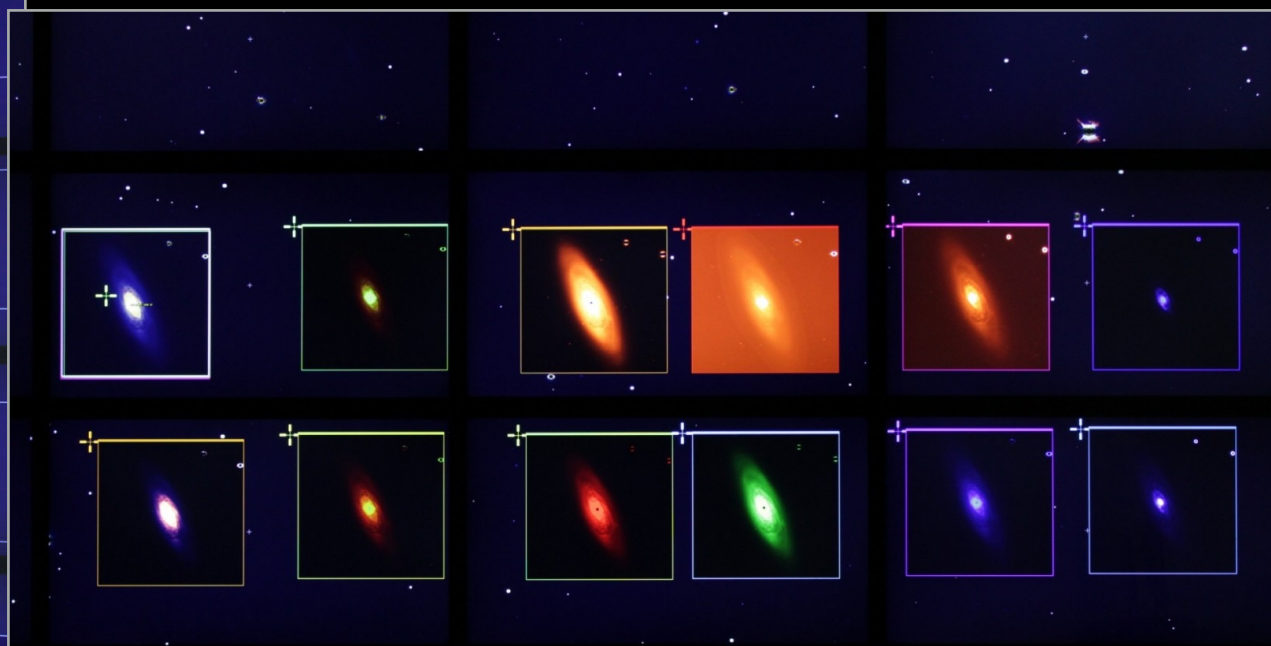
Constraint	FREE				ANCHORED			
Reference	EXTERNAL		INTERNAL		EXTERNAL		INTERNAL	
Shape	LINEAR	CIRCULAR	LINEAR	CIRCULAR	LINEAR	CIRCULAR	LINEAR	CIRCULAR
1 CP								
2 CP								
3 CP								
4 CP				
5 CP				

- Handling collections of images
- Dynamic color lookup table/scaling algorithm
- Handling heterogeneous data sources (SIMBAD queries, PDF documents, ...)

Interaction:

- Gestures, multiple input devices (handheld devices, RT motion tracking, ...)
- View management
- Collaborative work

FITS-OW: Visualization of large HDR imagery



LGG 371
HGGK 303
HGGK 603
HGGK 616
HGGK 454
[TFR90] 3
HGGK 608
HGGK 559
HGGK 641
HGGK 654
SDSS J140312.30+543543.1
HGGK 672
[KPM2002] G102.4677+59.5339
[AG79] 6
SDSS J140313.24+543548.8
HD 122865
HGGK 668
[VSH98] NGC 5457 +005+887
NAME GOSS I
HGGK 681
SDSS J140313.72+543543.2
HGGK 682
[VSH98] NGC 5457 +010+885
SDH 321
SDSS J140314.50+543529.1
HGGK 264

Basic Data Measurements

[TFR90] 3

Object type X-ray source

ICRS coord. (ep=j2000) :14 02 51.4,+54 39 40,(~),D,[3000 3000 90],~

FK5 coord. (ep=j2000 eq=2000) :14 02 51.4,+54 39 40,(~),D,[3000 3000 90],~

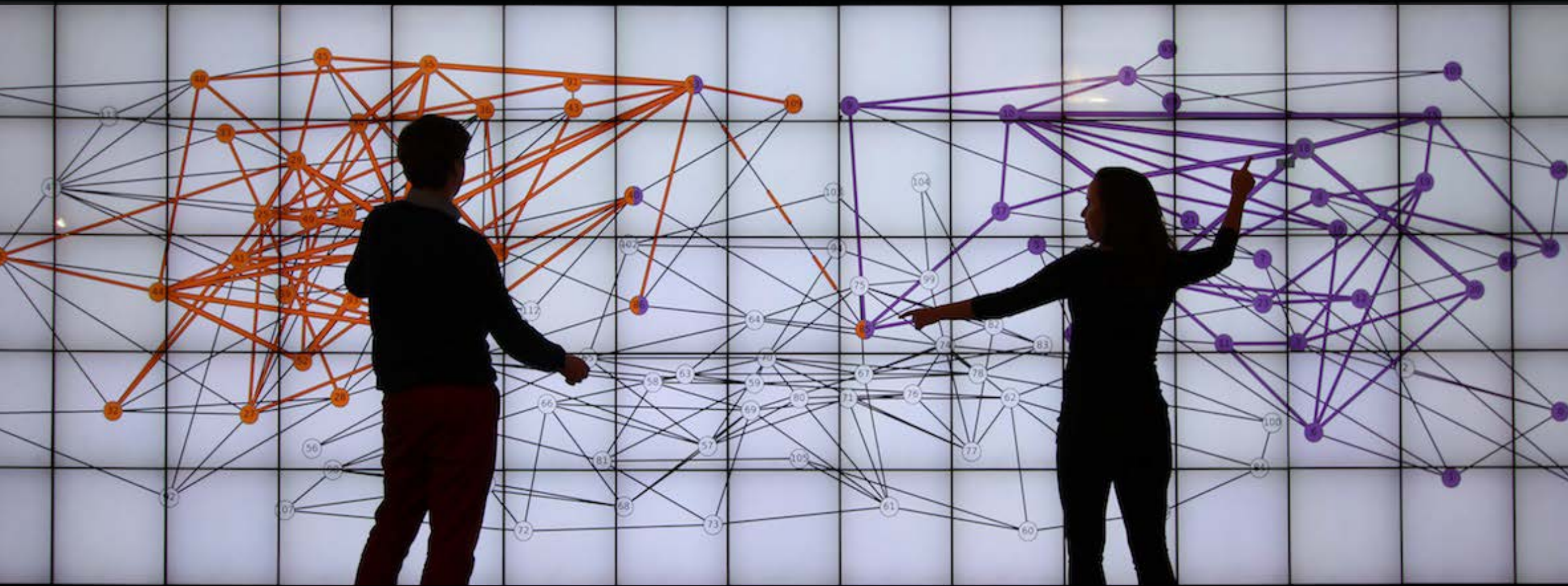
FK4 coord. (ep=B1950 eq=1950) :14 01 05.7,+54 54 03,(~),D,[3000 3000 90],~

Gal coord. (ep=j2000) :102 27 25,+59 32 12,(~),D,[3000 3000 90],~



Evaluating Multi-user Selection for Exploring Graph Topology on Wall Displays

A. Prouzeau, A. Bezerianos, O. Chapuis, *IEEE Transactions on Visualisation and Computer Graphics (TVCG)* 2016



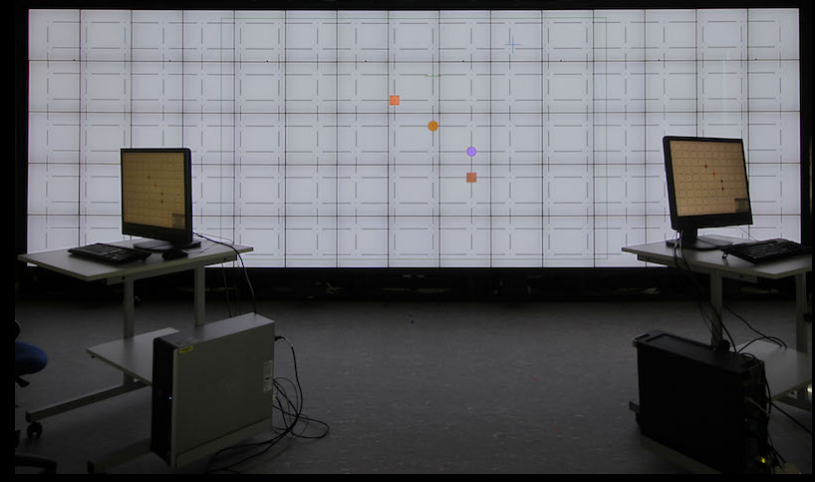
Towards Road Traffic Management with Forecasting on Wall Displays

A. Prouzeau, A. Bezerianos, O. Chapuis
ACM Interactive Surfaces and Spaces (ISS) 2016



Trade-offs between a Large Vertical Display and Two Desktops in a Collaborative Path-Finding Task

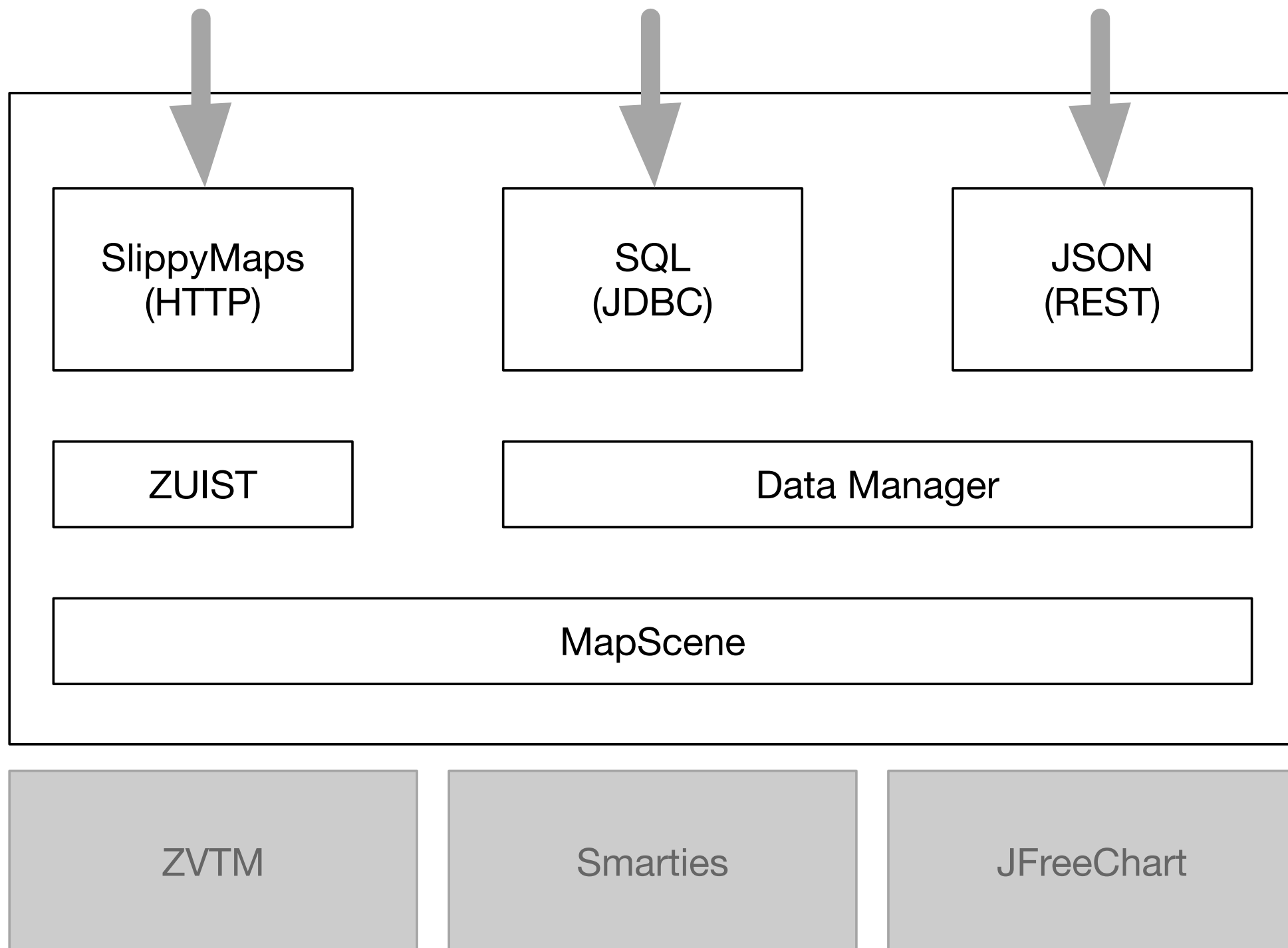
A. Prouzeau, A. Bezerianos, O. Chapuis
Graphics Interfaces (GI), 2017



Monitoring Air Quality in Korea's Metropolises



KAM: Data Management & Dependencies



KAM: Multi-scale Navigation

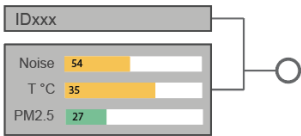
Zoom L0



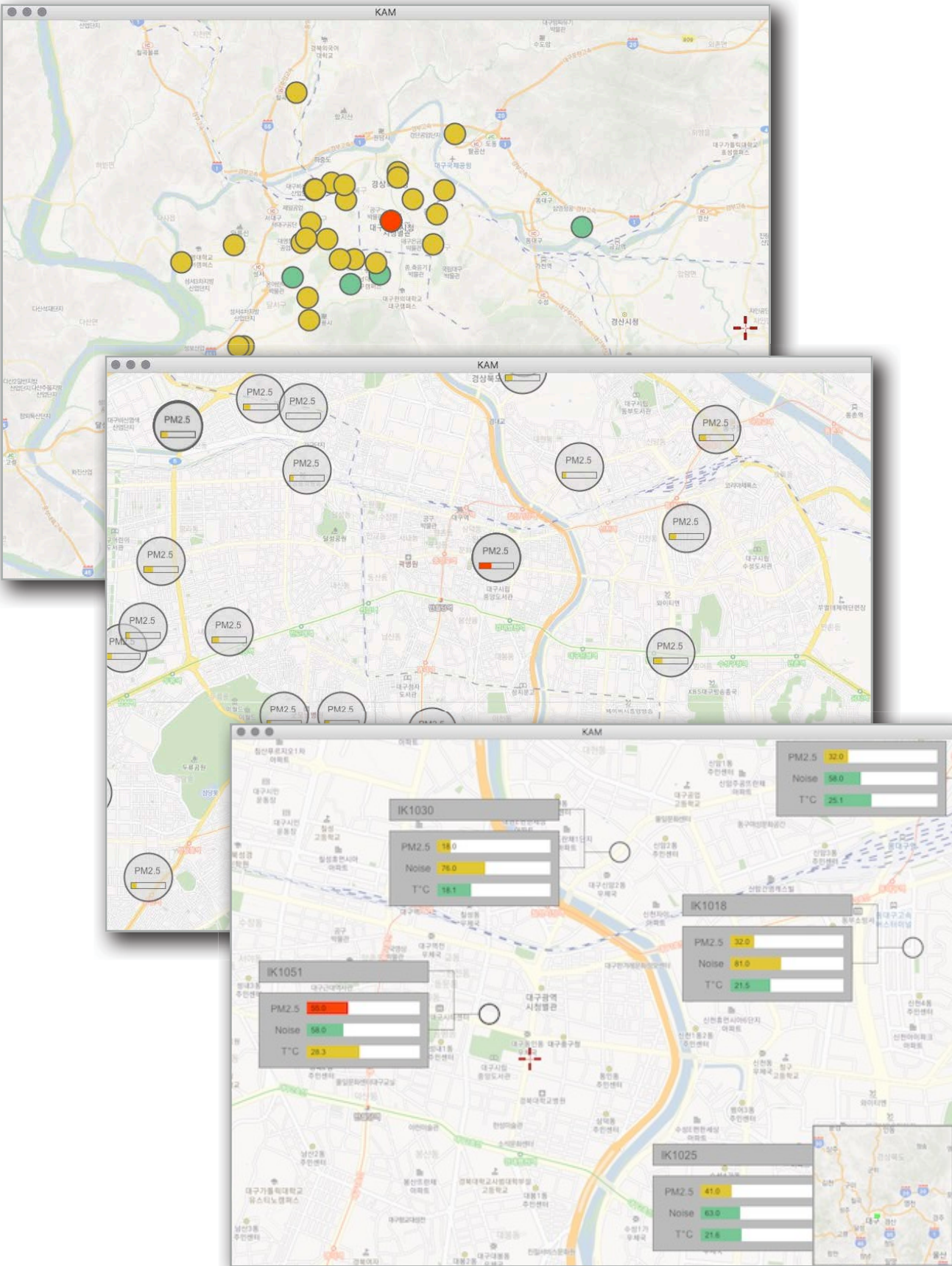
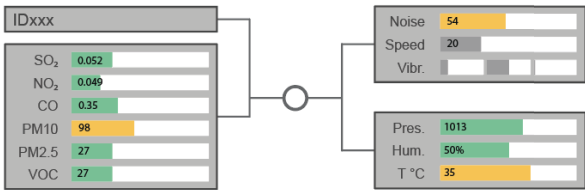
Zoom L1



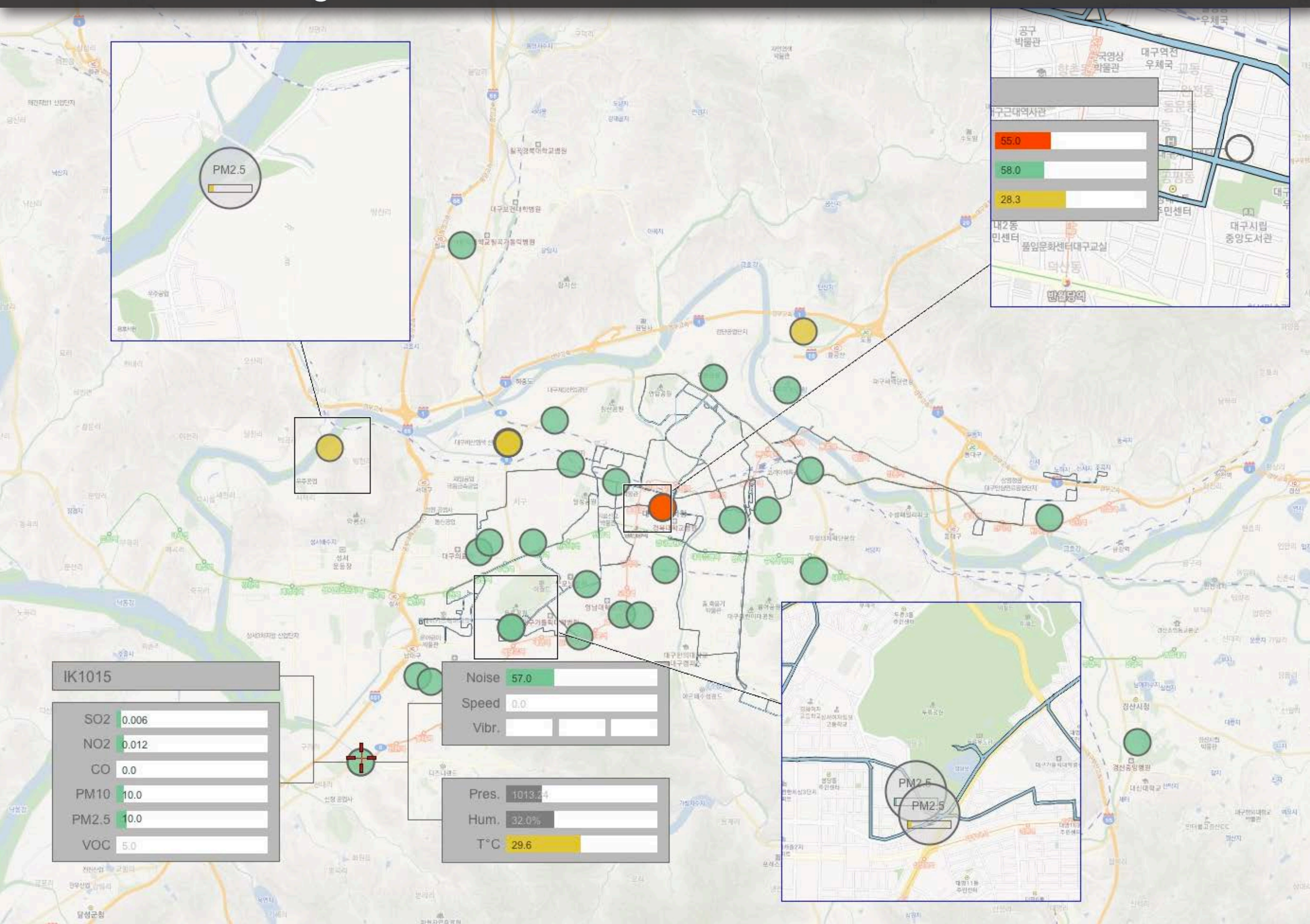
Zoom L2



Zoom L3



KAM: Multi-scale Navigation



KAM: Route & Sensor History

